

THAT WHICH IS CLAIMED:

1. A video amplifier circuit comprising:
 - a first stage amplifier having a high signal gain and a low noise figure and having an input coupled to a video input signal and an output;
 - 5 a second stage amplifier having a high output power and a low distortion and having an input electrically coupled to the output of the first stage amplifier and an output; and
 - a splitter circuit having an input coupled to the output of the second stage amplifier and a plurality of outputs.
- 10 2. The video amplifier circuit of Claim 1 wherein the output power of the second stage amplifier is greater than 23 decibels millivolts (dBmV) and wherein the distortion of the second stage amplifier is no greater than about CTB 56 dBc, CSO 58 dBc.
- 15 3. The video amplifier circuit of Claim 2 wherein the signal gain of the first stage amplifier is greater than 15 decibels (dB) and the noise figure of the first stage amplifier is less than 3.5 dB.
- 20 4. The video amplifier circuit of Claim 3 wherein the noise figure of the first stage amplifier is less than 1.5 dB.
- 25 5. The video amplifier circuit of Claim 3 wherein the first stage amplifier is an RF2320 amplifier and the second stage amplifier is an RF2317 amplifier.
6. The video amplifier circuit of Claim 1 wherein the splitter circuit includes more than 16 outputs.

7. The video amplifier circuit of Claim 1 further comprising:
a first matching circuit coupling the video input to the input of the first stage amplifier;
5 a second matching circuit coupling the output of the first stage amplifier to the input of the second stage amplifier;
a first biasing circuit electrically coupled to the output of the first stage amplifier;
a second biasing circuit electrically coupled to the output of the second stage amplifier; and
10 a direct current (DC) blocking circuit coupling the output of the second stage amplifier to the input of the splitter circuit.
8. The video amplifier circuit of Claim 1 wherein the video input signal comprises a video input/output signal for bi-directional communications and wherein the video amplifier circuit further comprises:
a diplexer circuit having an input electrically coupled to the video input/output signal and a high frequency output electrically coupled to the input of the first stage amplifier and a low frequency connector;
15 a return channel amplifier circuit electrically coupled between the low frequency connector of the diplexer and the input of the splitter circuit; and
a combiner circuit coupling the return channel amplifier and the second stage amplifier to the input of the splitter circuit.
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- 25 9. The video amplifier circuit of Claim 8 wherein the bi-directional communications comprises digital over cable systems interface specification (DOCSIS) protocol communications.

10. The video amplifier circuit of Claim 8 further comprising:
a first return channel matching circuit coupling the return channel
amplifier to the combiner circuit; and
a second return channel matching circuit coupling the return channel
5 amplifier to the diplexer circuit.
11. A cable distribution module for routing a DOCSIS compatible
connection with a cable network to a plurality of connection points, the module
comprising:
10 a cable input configured to be connected to the cable network;
a diplexer circuit electrically coupled to the cable input that splits a signal
on the cable input into a forward and a return channel;
a return channel amplifier circuit electrically coupled between the
plurality of connection points and the diplexer circuit on the return channel;
15 a two stage amplifier circuit electrically coupled between the diplexer
circuit and the plurality of connection points on the forward channel, the two
stage amplifier circuit including a first stage amplifier having a high signal gain
and a low noise figure and a second stage amplifier having a high output power and
a low distortion;
20 a combiner circuit coupling the return channel amplifier circuit and the two
stage amplifier circuit to the plurality of connection points; and
a splitter circuit coupling the combiner circuit to the plurality of connection
points.
- 25 12. The cable distribution module of Claim 11 wherein the output
power of the second stage amplifier is greater than 23 decibels (dB) and wherein
the distortion of the second stage amplifier is no greater than about CTB 56 dBc,
CSO 58 dBc.

13. The cable distribution module of Claim 12 wherein the signal gain of the first stage amplifier is greater than 15 decibels (dB) and the noise figure of the first stage amplifier is less than 3.5 dB.

5 14. The video amplifier circuit of Claim 13 wherein the noise figure of the first stage amplifier is less than 1.5 dB.

10 15. The cable distribution module of Claim 13 wherein the first stage amplifier is an RF2320 amplifier and the second stage amplifier is an RF2317 amplifier.

15 16. The cable distribution module of Claim 15 further comprising:
at least one internal video signal input;
an internal signal amplifier circuit electrically coupled to the at least one internal video signal input; and
a second combiner circuit coupled between the first combiner circuit and the splitter circuit and electrically coupled between the internal signal amplifier circuit and the splitter circuit.

20 17. The cable distribution module of Claim 16 wherein the cable input receives a cable television (CATV) signal in a first frequency band and wherein each of the at least one internal video signal inputs has an associated frequency band different from the first frequency band so that a receiver connected to one of the plurality of connection points may select one of the CATV signal or the at least one internal video signal as a received signal by tuning to an associated frequency band for one of the signals.

25 18. The cable distribution module of Claim 16 wherein the at least one internal video signal input comprises a plurality of internal video signal inputs and

wherein the module further comprises a third combiner circuit coupling the plurality of internal video signal inputs to the internal signal amplifier circuit.

19. The cable distribution module of Claim 13 wherein the splitter circuit includes more than 16 connection points.

20. The cable distribution module of Claim 19 wherein the splitter circuit includes at least 32 connection points.

10 21. A video distribution module for routing a video connection to a plurality of connection points, the module comprising:

a video input configured to receive a video signal from at least one of an antenna or a cable network;

15 a two stage amplifier circuit electrically coupled between the video input and the plurality of connection points, the two stage amplifier circuit including a first stage amplifier having a high signal gain and a low noise figure and a second stage amplifier having a high output power and a low distortion; and

a splitter circuit coupled between the two stage amplifier circuit and the plurality of connection points.

20 22. The video distribution module of Claim 21 further comprising:
at least one internal video signal input;

an internal signal amplifier circuit electrically coupled to the at least one internal video signal input; and

25 a combiner circuit coupled between the two stage amplifier circuit and the splitter circuit and electrically coupled between the internal signal amplifier circuit and the splitter circuit.

23. The video cable distribution module of Claim 22 wherein the output power of the second stage amplifier is greater than 23 decibels (dB) and wherein the distortion of the second stage amplifier is no greater than about CTB 56 dBc, CSO 58 dBc.

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24. The video distribution module of Claim 23 wherein the signal gain of the first stage amplifier is greater than 15 decibels (dB) and the noise figure of the first stage amplifier is less than 3.5 dB.

10 25. The video amplifier circuit of Claim 24 wherein the noise figure of the first stage amplifier is less than 1.5 dB.

26. The video distribution module of Claim 24 wherein the splitter circuit includes more than 16 connection points.

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27. The video distribution module of Claim 26 wherein the splitter circuit includes at least 32 connection points.

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